REMARKS

Applicant appreciates the time taken by the Examiner to review Applicant's present application. This application has been carefully reviewed in light of the Official Action mailed 17 January 2003. Applicant respectfully requests reconsideration and favorable action in this case.

Rejections under 35 U.S.C. § 112

Claims 1-16 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Claims 1, 5, 6, 7, 11, 12, 15 and 16 have been appropriately amended to overcome the 35 U.S.C. § 112 rejections and Applicant respectfully requests the Examiner withdraw the rejections and allow Claims 1-16.

Rejections under 35 U.S.C. § 102

Claims 1-4 and 7-10 stand rejected under 35 U.S.C. § 102 as being unpatentable over U.S. Patent No. 5,459,794, issued to Ninomiya. The Examiner states:

> Ninomiya teaches a method of visualization of a part 14 having metallic objects against a "light" colored non-metallic background comprising illuminating the part with electromagnetic radiation that is linearly polarized in a predetermined first direction, and forming an image S1 of electromagnetic radiation reflected from the part viewed through a linearly polarization filter oriented for passing electromagnetic radiation that is linearly polarized in a second direction that is substantially orthogonal to the first direction, whereby in the formed image, an enhanced contrast between the metallic objects and the background is produced (Col. 6 line 65, to Col. 7, line 23).
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> Regarding Claim 2, Ninomiya teaches recognizing the metallic objects in the formed image (See Abstract).
>
> Regarding Claim 3, Ninomiya teaches the electromagnetic radiation is light, and the image is formed by a camera (Col. 6 line 65 to Col. 7, line 23; see Fig. 1).

Regarding Claim 4, Ninomiya teaches the electromagnetic radiation is light, the image is formed by a camera of a computer vision system, and said recognizing is performed by the computer vision system (Col. 8, lines 17-39).

Regarding Claim 7, Ninomiya teaches an apparatus for visualization of a part having metallic objects against a "light" colored non-metallic background comprising: one or more sources for illuminating the part with electromagnetic radiation that is linearly polarized (11 and 12), at least one of the sources producing electromagnetic radiation that is linearly polarized in a predetermined first direction, and an image forming device 16 for forming an image of electromagnetic radiation reflected from the part viewed through a linearly polarization filter 15 oriented for passing electromagnetic radiation that is linearly polarized in a second direction that is substantially orthogonal to the first direction, whereby in the formed image, an enhanced contrast between the metallic objects and the background is produced (Col. 6 line 65 to Col. 7, line 23).

Regarding Claim 8, Ninomiya teaches a computer vision system for recognizing the metallic objects in the formed image (See Abstract).

Regarding Claim 9, Ninomiya teaches the electromagnetic radiation is light, and the image forming device is a camera (Col. 6 line 65 to Col. 7, line 23; Se Fig. 1).

Regarding Claim 10, Ninomiya teaches the electromagnetic radiation is light, and the image forming device is a camera of the computer vision system (Col. 8, lines 17-39).

Applicant respectfully submits that Ninomiya teaches measuring the sizes of circuits within an integrated circuit chip. Ninomiya fails to teach the "Surface Mount Tool" or "Pick and Place Machine" as claimed in the present invention which recognizes, inspects and automatically places surface mount components. Rather, Ninomiya merely teaches the measurement of features within an integrated circuit chip and fails to mention using such visualization techniques to identify parts and place those parts.

Applicant respectfully submits that Ninomiya fails to teach or suggest "Pick and Place Machine" or "Surface Mount Tool" the inventions recited in independent Claims 1, 7 and 17. Additionally, one would not necessarily apply the teachings of IC fabrication to surface mount technology which differ by several orders of magnitude. Thus, it is improper to apply the teachings of Ninomiya in this instance.

Claims 2-4 and 8-10 depend from independent claims 1 and 7, and are patentably distinct as a further limitations upon independent claims 1 and 7. As such, Applicant respectfully requests the Examiner withdraw the rejections and allow Claims 1-4 and 7-10.

<u>Rejections under 35 U.S.C. § 103</u>

Claims 13 stands rejected under 35 U.S.C. § 103 as being unpatentable over Ninomiya. Claims 5, 6, 11, 12 and 14 stand rejected under 35 U.S.C. § 103 as being unpatentable over Ninomiya et al. (5,459,794) in view of Ludlow, et al. (6,201,892). The Examiner states:

> Regarding Claim 13, Ninomiya does not explicitly teach such a manipulator. However, the use of pick-and-place machines for this purpose is well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art to use the inspection apparatus of Ninomiya with a pick and place machine as recited in Claim 13, as the use of pick-and-place machines are well known in the art, in order to eliminate the manual labor involved in placing parts if assembled products.
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> Claims 5, 6, 11, 12, and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ninomiya et al. (5,459,794) in view of Ludlow et al. (6,201,892).
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> Regarding Claims 5, 6, 11, and 12, Ninomiya does teach the background being a ceramic (i.e. a dielectric) (Col 7, lines 4-7). Ninomiya does not teach a ball grid array. However, Ludlow teaches using a light imaging inspection system for inspecting a ball grid array (Col. 5, lines 50-62). Therefore, it would have been obvious to one of ordinary skill in the art to use the device or method of Ninomiya with a ball grid array as taught in Ludlow, as the inspection of BGAs is will [sic] known in the art as shown by Ludlow, in order to provide for a common type of specimen in the device of Ninomiya.

Regarding Claim 14, Ninomiya does not explicitly teach such a manipulator. However, the use of pick-and-place machines for this purpose is well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art to use the inspection apparatus of Ninomiya with a pick and place machine as recited in Claim 14, as the use of pick-and-place machines are well known in the art, in order to eliminate the manual labor involved in placing parts if assembled products.

Applicant respectfully points out that in order to combine references for an obviousness rejection, there must be some teaching, suggestion or incentives supporting the combination. *In re Laskowski*, 871 F.2d 115, 117, 10 U.S.P.Q. 2d 1397, 1399 (Fed. Cir. 1989). The mere fact that the prior art could be modified does not make that modification obvious unless the prior art suggests the desirability of the modification. *In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984). In addition, it is well established that Applicant's disclosure cannot be used to reconstruct Applicant's invention from individual pieces found in separate, isolated references. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596 (Fed. Cir. 1988).

Applicant respectfully submits that there is no motivation, teaching or suggestion to combine Ninomiya with Ludlow. Therefore, the rejection on a combination of these references is inappropriate. Withdrawal of the rejection allowance of Claims 5, 6, and 11-14 respectfully requested.

Applicant further submits that neither Ninomiya or Ludlow alone nor the combination of the two teaches or suggests make obvious the "Pick and Place Machine" or "Surface Mount Tool" recited in Claim 1, 7, and 17. Ninomiya merely teaches the measurement of circuits within an integrated circuit chip, while Ludlow merely teaches an inspection system used to determine the need for reworking an object. Furthermore, Ludlow requires the inspected objects to be illuminated twice and that multiple images are combined. These combined images enhance the visibility of "reflective features being inspected on the object." (Ludlow, Column 17, lines 42-45). In either case, the prior fails to teach the Applicant's invention by far, as both references fail to teach a "pick and place machine." Furthermore, it is appropriate to apply the teachings of IC manufacturing and manual inspection techniques to automated printed circuit board assembly.

Applicant, therefore, respectfully requests the Examiner to reconsider and withdraw the rejection to allow Claim 5, 6, and 11-14.
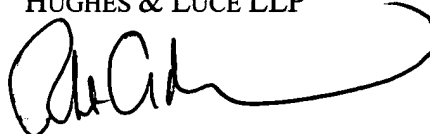
Additional Claims

Claims 17-20 have been added to more particularly claim the invention with regard to the above stated limitations.

Conclusion

Applicant has now made an earnest attempt to place this case in condition for allowance. For the foregoing reasons and for other reasons clearly apparent, Applicant respectfully requests full allowance of Claims 1-20.

Respectfully submitted,
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